CANAL FILLING METHOD AND DEVICE FOR PROVIDING THE FILLING PRODUCT

The present invention relates to the field of obturation methods for filling the root canals of teeth, and more specifically to the phase of actually filling the canal in the tooth using a filling material of the Gutta percha or some other type, in the form of a paste which is introduced into the root canal using a root-canal instrument known as a "condenser" comprising a screw and arranged on a handpiece.

The present invention also relates to a device for making filling material available and to a container for containing the filling material.

Procedures for filling root canals are already known in the prior art.

The prior art, for example, discloses a method which consists in using instruments, the body of which is made of plastic, and onto which the Gutta percha is added. To perform the filling, the assembly is introduced, after heating, into the canal, but the major disadvantage with this method is that the plastic body remains in the canal and causes considerable inconvenience if the filling work performed subsequently needs to be repeated.

The prior art also discloses the method which consists in arranging the filling product on an instrument known as a "condenser", which is in the form of a root-canal instrument with a screw, for example a left-hand screw, arranged on a handpiece so that the filling material can be deposited or "condensed" into the canal by rotating the instrument in the opposite direction to the hand of the screw. To coat the instrument with filling material, such as Gutta percha for example, the Gutta percha is arranged in a syringe placed in a

heater and the plunger of the syringe is actuated, when the Gutta percha is ready, so as to deposit it onto the root-canal instrument positioned just at the outlet of the syringe. This method has two disadvantages: on the one hand it does not allow precise control over the amount of Gutta percha applied to the root-canal instrument and, on the other hand, as the amount of Gutta percha contained in the syringe is great, the dental practitioner is strongly tempted to treat several root canals belonging to different patients using the same syringe. In this latter case, there is a risk then that the practitioner will contaminate the second patient or patients with bacteria from the first patient or patients.

The present invention sets out to overcome the drawbacks of the prior art by proposing to present the filling material in the form of at least one dose arranged in a container of the cartridge type, each dose being an individual dose and corresponding roughly to the amount needed to treat and fill just one canal, the root-canal instrument being plunged, rotating or stationary, into one of said cartridges containing a dose of filling material, this making it possible for just the amount of filling material needed to carry out the operation of filling the root canal to be picked up on the walls of the root-canal instrument.

The procedure according to the invention therefore makes it possible to carry out the phase of actually filling the root canal of the tooth using just the amount of filling material needed, and under optimum hygiene conditions.

The device for making the filling material available according to the invention is notable in that it comprises means allowing at least one cartridge containing filling material in the form of a dose roughly corresponding to the amount needed to treat and

fill one single canal to be brought up to and maintained at the desired temperature.

The filling material container of the cartridge type intended to allow the filling of root canals according to the invention is notable in that it contains at least one dose of filling material roughly corresponding to the amount needed to treat and fill one single canal. It can therefore be sold independently or in large quantities, ready for use and disposable after use.

The invention will be better understood with the aid of the description given hereinafter of two embodiments of the invention which are given by way of nonlimiting examples with reference to the appended drawings in which:

- figure 1 illustrates a perspective view of the device according to the invention according to a first alternative form,

- figure 2 illustrates a phase of coating a root-canal instrument; and

- figure 3 illustrates an enlarged sectional view of a cartridge according to the invention, suited to the device of figure 1,

- figure 4 is a perspective view of a device according to the invention according to a second alternative form;

- figure 5 is a view in longitudinal section of the device in figure 4, on a different scale.

The method according to the invention is a method for the filling of root canals using a filling material (1) of the Gutta percha or some other type, in the form of

a paste, which is introduced into the root canal using a root-canal instrument (2) known as a "condenser" comprising a screw and arranged on a handpiece (3).

The method is characterized in that said filling material (1) is in the form of a number of doses (4) each arranged in a cartridge (5), each dose (4) roughly corresponding to the amount needed to treat and fill one single canal.

Thus, to deposit said filling material (1) on the root-canal instrument (2), the root-canal instrument (2) is plunged, rotating or stationary, into one of said cartridges (5) containing a dose (4) of filling material (1) so as to pick up on its walls just the amount of filling material needed for the filling operation, as illustrated in figure 2.

To fill the root canal, all that is then required is for the root-canal instrument (2) to be positioned correctly in the root canal and made to rotate in the opposite direction to the hand of the screw so as to fill the root canal with filling material (1).

It should be noted that, by virtue of the method according to the invention, it is not necessary to reverse the direction of rotation of the screw of the instrument in order to load it with filling material.

The present invention also relates to a device (6), illustrated in figure 1, for making available filling material (1) of the Gutta percha or some other type, in the form of a paste, which is introduced into the canal of a tooth using a root-canal instrument (2) known as a "condenser" comprising a screw and arranged on a handpiece (3), characterized in that it comprises means allowing at least one cartridge (5) containing filling material (1) in the form of a dose (4) roughly corresponding to the amount needed to treat and fill

one single canal to be brought up to and maintained at the desired temperature.

The device (6) may, for example, be in the form of a unit (7) comprising a number of recesses (8) in each of which a cartridge (5) may be positioned.

The means for raising at least one cartridge (5) to the desired temperature and maintaining it at that temperature may, for example, consist in the fact that said recess or recesses (8) are formed in a heat-conducting heating body (9) heated using a resistive electric element.

The device (6) may further comprise a switch (10) and an operating indicator (11).

The present invention also relates to a cartridge (5), illustrated in figure 3, intended to allow a root canal to be filled using a filling material (1), characterized in that it contains an individual dose (4) of filling material (1) roughly corresponding to the amount needed to treat and fill one single canal.

Said cartridge (5) is, for example, in the form of a hollow cylinder which has a bottom, and is made of plastic.

As a preference, said cartridges (5) are also equipped with means of sealed closure, of the stopper or thermally bonded seal type, for example, that can be opened just before the filling material is picked up.

Thus, the cartridges (5) of filling material (1) can be offered for sale ready for use and disposable, that is to say ready to be heated in the device (6) and able to be disposed of after the filling material they contain has been used.

Reference is now made to the device of figures 4 and 5.

The device with the general reference (6') essentially comprises a unit (7') equipped with the controls and supplies which are usual for an electrical device (switches, on-off indicator light, timer, etc).

In this alternative form, the cartridge (5') is placed in a pot (13) comprising:

- a central housing (14) for accommodating the cartridge,
- a thermal mass (15),
- thermally insulated external surfaces - (16) around the body of the pot and (17) over the top surface of said pot.

The thermal mass (15) is accessible towards the bottom of the pot and has a female cavity which accommodates a heating rod (18).

The insulated surface (17) forms a lid on the pot (13). It has a circular shoulder (19) which collaborates with a trigger (20) articulated to the body (7') allowing the pot, possibly with its cartridge, to be locked in/released from the device. The function of the trigger is to hold the pot in its housing and, when the latter is removed, to completely close off the housing to prevent dirt from entering the housing, as this would disturb the contact between the heating body and the thermal mass of the pot. Furthermore, it prevents the risk of contact between fingers and the high-temperature heating body.

The thickness of the trigger is such that it can be moved aside simply under the pressure of the pot held by hand by the user.

The thermal inertia of the mass (15) allows the user to work leaving the device as it is and handling only the pot and the cartridge it contains.

The pot and its thermal mass may be sterilized, while the doses (cartridges) made be sold sterile.

This device is more flexible to use than the alternative form in figures 1 to 3.